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Procapra gutturosa.

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Procapra Hodgson, 1846

Procapra Hodgson, 1846: 334. Type species *Procapra picticaudata* Hodgson (original designation).

Prodorcas Pocock, 1918: 130. Type species *Antilope gutturosa* Pallas, 1777 (valid as a subgenus).

CONTEXT AND CONTENT. Order Artiodactyla, Suborder Ruminantia, Family Bovidae, Subfamily Antilopinae. *Procapra* includes three extant species, *P. gutturosa*, *P. picticaudata*, and *P. przewalskii* (Bannikov, 1954). A key to species follows:

1 Size larger, greatest length of skull >225 mm; horns of males separated at base, strongly diverging distally, tips turned slightly inward; small carpal tufts and large inguinal glands; white rump patch (speculum) not bordered by dark line between white patch and sandy color of back and sides ..... *Procapra gutturosa*

Size smaller, greatest length of skull <225 mm; horns of males nearly touching at base, less strongly diverging, tips turning either forward or strongly inward; no carpal tufts or inguinal glands; darker line between color of back and sides and white of rump patch 2

2 Male horns longer, >250 mm in adult, bent forward in antero-posterior plane distally; white rump patch surrounded by bright yellowish-red area, but no dark line; crown of M1 rectangular in outline ..... *Procapra picticaudata*

Male horns shorter, <250 mm in adults, bent strongly inward in lateral plane distally; white rump patch bordered by line of dark fur, separating it from yellowish to reddish color of back and sides; crown of M1 square in outline ..... *Procapra przewalskii*

Procapra gutturosa (Pallas, 1777)

Mongolian Gazelle

Antelope gutturosa Pallas, 1777:46 (Pallas, 1777). Transbaikalia (G. Allen, 1940:1211, fixed the type locality as "the upper Onon River in Southern Transbaikalia").

Antelope orientalis Erxleben, 1777:288. Renaming of *gutturosa*.

Procapra altaica Hollister, 1913:1. Type locality "Suok Plains, near south end of Bain-Chagan [Bayan-Tsagan] Pass, Little [Mongolian] Altai."

CONTEXT AND CONTENT. Context as in generic summary above. Comparison of a large series of skulls and skins of *P. gutturosa* from various regions of Mongolia revealed no marked geographic variation, and no subspecies are recognized (Bannikov, 1954).

DIAGNOSIS. Within *Procapra* one species stands out in several respects and is sometimes treated as a separate genus (*Prodorcas*), showing intermediacy between *Procapra* and *Gazella* (Heptner et al., 1988). This is the large species *Procapra gutturosa* (Pallas, 1777). Compared with congeners, *P. gutturosa* is a more specialized form, as is revealed most notably in gland development (Bannikov, 1954). *P. gutturosa* has small preorbital glands and carpal tufts which may contain glands (Pocock, 1918). Inguinal glands are large, whereas other species have none (Pocock, 1918). There is also a preputial glandular sac in *P. gutturosa*, which is absent in other members of the genus. Moreover, *P. gutturosa* differs from other species of genus *Procapra* in being larger, with a larger skull (see key).

GENERAL CHARACTERS. *Procapra gutturosa* is an antelope of stout build with a broad back and chest, standing on slender but strong legs. The head is large and broad, with large, S-shaped nostrils. Between the lower corners of the nostrils and along the midline of the upper lip, there occurs a narrow strip of bare skin. The eyes are not large but protrude; irises are dark brown to almost black. Lacrimal fossa is small and covered with hair. The ears are covered outwardly with light-colored hair; three indistinct furrows occur on their inner surfaces. The tail is bare ventrally, and covered with long, light-colored hair dorsally, which is sometimes brownish at the tip (Heptner et al., 1988). Ranges of external body measurements (in cm; *n* in parentheses when known) for males and females, respectively, are as follows (Heptner et al., 1988): length of head and body, 105–148 (56), 110–121 (41); height at withers, 62–84, 54–74; length of tail, 9–12 (males and females combined); length of ear 9.5–12 (males and females combined). Body mass of males (n = 87) 24–39 kg; females (n = 64) 20–28 kg. The withers are slightly higher or equal to height of sacrum. The trunk is roughly as long as height at withers. In males, a strongly developed larynx projects downward in the form of a "goiter." Maximum length of skull is 236–263 mm and 222–251 mm in adult males and females, respectively (Fig. 1).

Horns are dark gray to oily black, lyrate, close-set at base, diverge gradually, turning back and slightly inward distally, but not forward as in *Gazella subgutturosa*; distance between horn tips is 6–10 times greater than between their bases (Fig. 1). Length of horns along curvature ranges from 180 to 280 mm; basal horn diameter is oval, 32–40 mm (longitudinally) and 22–33 mm (transversely). Proximal two-thirds of adult horn has thickenings in the

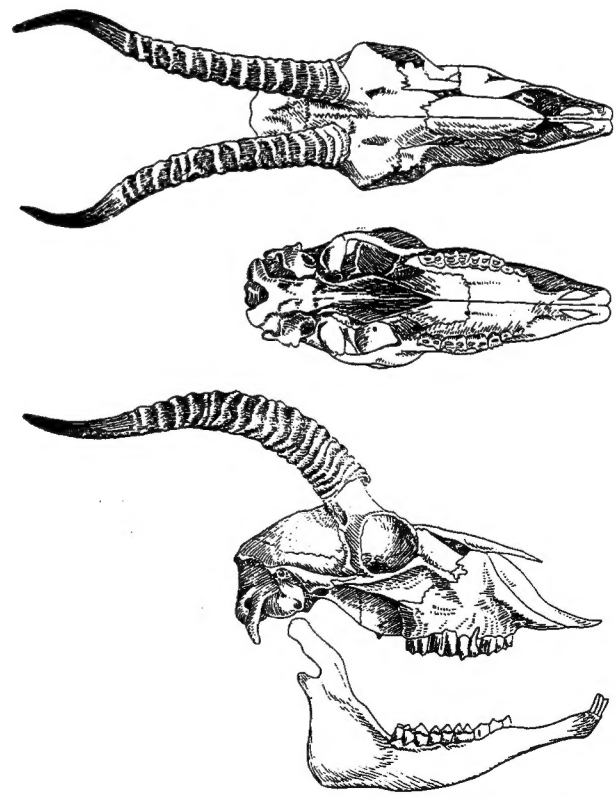

FIG. 1. Dorsal, ventral, and lateral views of skull and lateral view of mandible of adult male *Procapra gutturosa*. Greatest length of cranium is 263 mm.

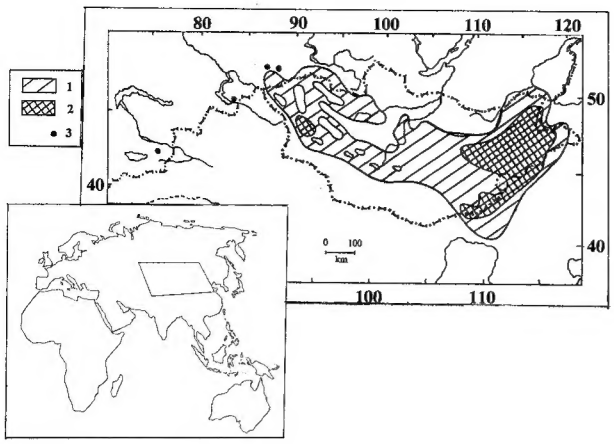

FIG. 2. Distribution of *Procapra gutturosa* in Central Asia: 1, Historical distribution (Heptner et al., 1988); 2, Present distribution (Lushchekina et al., 1986); 3, Fossil localities indicated by circles (Dmitrieva, 1977; Kozhamkulova, 1969).

form of rings, typically 16–18 (and up to 24 or 26 rings). Distal 4.0–6.0 cm of horn is smooth and round (Heptner et al., 1988).

Hooves are black, fairly broad but coming to a point anteriorly. Hoof length is 42–54 mm and width is 0.67 of the length. Lateral hooves are 12–15 mm long and forehooves are slightly (2.0–5.0%) larger than hind ones (Bannikov, 1954).

Winter hair is long, ranging from 30 to 50 mm, and slightly curly. Coat on forehead, crown, ears, throat, and rear of back is remarkably long and luxuriant. Long, rigid hairs along sides of upper lip form whiskers. Winter color of upper body is light sandy-gray, gradually becoming white on the underside without sharp boundaries. Outer surfaces of ears, nose, forehead, and upper part of cheek are light or dirty yellowish gray (Bannikov, 1954).

Summer hair is 15–25 mm long and yellowish-sandy on upper portion; abdomen and chest are white with dirty yellow tinge. Lower lip, anterior portion of upper lip, throat, inner surface of legs, and speculum are white, sometimes with a yellowish or grayish tinge. Dorsal and lateral portions of speculum stands out sharply from sandy color of back. Coloration of back, sides, and anterior surface of lower third of legs is darker. Upper part of muzzle is pale brownish-gray. Crown, occiput, and sides of neck are rusty, and the neck as far down as the chest is yellowish-white. Sexual dimorphism in coloration is not discernible (Bannikov, 1954; Heptner et al., 1988).

DISTRIBUTION. In recent times *P. gutturosa* was widely spread across the Central Asia steppe belt, from the Chuisk (Chuya) steppe (southeastern Altai) in the west, to the plains of eastern Mongolia and Barga (China) in the east (Fig. 2). To the north, Mongolian gazelles formerly reached southern steppe localities in Tuva and the Baikal region. The southern boundary of Mongolian gazelle distribution extended across Mongolia to approximately the northern slopes of the Mongolian and Gobian Altai and to slightly north of the Hwang Ho river in China, thus coinciding with the southern boundary of desert steppes (Bannikov, 1954). The eastern boundary of the range crossed the midcourse of the Liao Ho river and in the southeast the Peking Plains fell within the range of *P. gutturosa* in the last century and up to the beginning of the 1940s. Today, animals do not occur beyond the Great Wall. The southern and northern boundaries are highly variable according to snow depth and food availability. Within these boundaries, Mongolian gazelles are absent in elevated regions with a preponderance of rocks, high mountain steppes, and wooded groves. In China, although *P. gutturosa* inhabited Inner Mongolia (China) during the last 20 years, the species is not abundant (Zhang, 1990). In the mid-1940s, Mongolian gazelles inhabited practically the whole zone of dry and desert steppes of Mongolia, an area ca. 780,000 km^2. By the early 1970s the total range of *P. gutturosa* was sharply reduced in Mongolia. Today, the range of this species encompasses no more than 250,000 km^2 (Lushchekina et al., 1983), and the majority of the population is concentrated in the Eastern, Sukhe Bator, and East-Gobian aimaks (provinces), where several localities with abundant Mongolian gazelle herds have been noted during the summer-autumn period (Fig. 2). Due to extensive use of open range by domestic livestock and intensification of human disturbance, including direct harassment of Mongolian gazelles, these animals are now uncommon in the western part of their former range in the Mongolian People's Republic, and they remain only in small numbers in two localities isolated from each other, the left bank of the Dzabkhan river in the sands of Mongolels and in the South-Gobi district (Sokolov et al., 1982).

The current quantitative distribution of Mongolian gazelles shows that in eastern Mongolia there are three localities with the greatest concentration of Mongolian gazelle herds: Matadsko-Lagnursky, Asgatsko-Kharigal'tal'sky, and Tukhmiin-Gobian districts (Lushchekina et al., 1983; Sokolov et al., 1982). Here, mass concentrations of Mongolian gazelles for calving have been recorded repeatedly. These areas of concentration are surrounded by a relatively narrow belt supporting a lower, but still high, density of Mongolian gazelles. Farther to the north lies an area inhabited by small groups and solitary individuals, which is visited by larger herds only irregularly, whereas to the south of the zones of concentrated calving there is no such regular sequence of areas with different densities and regularity of use. This indicates that part of the summer range, as well as the autumn-winter range, of Mongolian populations of the Mongolian gazelle is located in China (Sokolov et al., 1982).

FOSSIL RECORD. Genus *Procapra* is known only from Pleistocene formations in Asia. In origin it is evidently associated with *Gazella*; it flourished in the region of the latter's present-day distribution and arose not earlier than the Upper Pliocene (Dmitrieva, 1977). Extinct and extant species of gazelles assigned to the genus *Procapra* are associated with Central Asia (Sokolov, 1959), which appears to be the area where their ancestor diverged from the common lineage of gazelles. Along with gazelles in the genus *Gazella*, strata from this period in China contain the remains of forms retaining well-developed preorbital fossae found in the goitered gazelle (*Gazella subgutturosa*), but the form of their last premolar tooth is characteristic of *Procapra*. Among known fossil forms, the Upper Pliocene *Gazella sinensis* Teihard de Chardin and Piveteau, and the Lower Pleistocene *Gazella paragutturosa* Bohlin, both from north China, are regarded as closely related to the hypothetical ancestor of *Procapra* (Sokolov, 1959).

Fossil remains of true Mongolian gazelles are known from sand blow-outs near the town of Troitskosavsk (Kyakhta region, Chitinsk oblast, USSR/Russia). V. S. Bazhanov and N. N. Kostenko (pers. comm.) in 1950 found a Mongolian gazelle jaw in deposits of the Ili formation on the northern slope of the Kirghiz range near Verkhnyaya Serafimovka village (Lugovoe region, Dzhambul oblast, Kyrgyz Republic; Kozhamkulova, 1969). Fossil finds of Mongolian gazelles in desert localities in the valley of the Chornyi [Black] Irtysh River are mentioned by Dmitrieva (1977). Cliff drawings of Mongolian gazelles are found in large numbers on spurs of ridges surrounding the Chuisk steppe. This gazelle was a basic component of the fauna in the southeastern Altai from the 5th century B. C. to the 1930s.

FORM AND FUNCTION. *Procapra gutturosa* has not given rise to distinct geographic races. Animals from the Mongolian Altai are indistinguishable from those of eastern Mongolia and hence the subspecies *altaica* described from Bayan-Tsagan-Gobi (Hollister, 1913) was not accepted (Bannikov, 1954). There is no sexual dimorphism in color.

The dental formula of *P. gutturosa* is i 0/3, c 0/1, pm 3/3, m 3/3, total 32 (Heptner et al., 1988). The appearance of pm1 is sometimes delayed. Molars are brachyodont. Female *P. gutturosa* do not possess horns. Horns of males emerge at 3.5–4.0 months; by the 6th month, their length is 0.5–3.2 cm (Sokolov, 1959). Mature horns are 25–28 cm long (Sokolov, 1959).

Procapra gutturosa has a well-developed corneal gland. Preorbital glands are rudimentary and are sometimes completely absent. The mammary glands have a single pair of teats. Mongolian gazelles possess acute vision; their sense of smell and hearing are slightly less developed (Heptner et al., 1988; Sokolov, 1959). According to Kleinschmidt (1961), *P. gutturosa* possesses many specialization connected with the respiratory tract, notably a bursa faucium and an enormously enlarged larynx, the so-called "goiter" of popular writings (Groves, 1967). No additional detailed studies of the internal organs or physiology of Mongolian gazelles have been made.

Few studies of molting in Mongolian gazelles exist. Spring molt begins in mid-April and ends in late May-early June (Bannikov, 1954; Sokolov et al., 1982). In autumn, Mongolian gazelles presumably molt in October; in September the animals are still in summer fur and by November they have changed to winter pelage.

ONTOGENY AND REPRODUCTION. Mongolian gazelle females mate for the first time at the age of 17–18 months (Bannikov, 1954). Because females calve between mid-June and early July, female progeny are not mature by the beginning of rut (late November). Only during their second autumn are females capable of reproducing. Gestation lasts ca. 6.5–7 months. From April onward, female Mongolian gazelles become cautious. During this period, only males remain on the plains, frequently with a small number of barren females. Pregnant females (up to 60% of females) move to hilly steppe areas where a thick cover of vegetation exists. According to long-term observations, calves are born between mid-June and early July (Luschekina et al., 1986). Most females in the herd calve during this period. Ten years of observations showed frequent repetition of mass calving of Mongolian gazelles in nearly the same location ("maternity homes"). The use of "maternity homes" may serve to reduce calf mortality (Heptner et al., 1988). More than 90% of females give birth to a single calf; twinning rates range from 2.5 to 8.2%.

The weight of a newborn Mongolian gazelle is 2.8–3.0 kg, and body length is 51–56 cm. Young Mongolian gazelles lie in secluded beds, typically in high grass, under bushes, or in depressions. Newborn Mongolian gazelles grow rapidly. One hour after their birth they can stand and nurse; they run quickly a day or two postpartum. During their first days of life, neonates feed mainly in the morning and evening hours. In fleeing from danger, young Mongolian gazelles can run 2–3 km at speeds of 40–50 km/hr. In ca. 5–12 days, females and calves leave their bedding places and slowly migrate to other steppe localities. At this time young Mongolian gazelles become very active, which seems to be important in formation of their behavior patterns. Females nurse their young until late autumn, even though young Mongolian gazelles begin to graze a week after birth. By late September-early October, the body is twice as long as that of a newborn animal. About 80% of young survive until autumn. Adult body size is attained ca. 11 months after birth (Bannikov, 1954).

ECOLOGY. The Mongolian gazelle is a typical inhabitant of zonal (but not montane) steppes, and in the summer two types of habitats are of great importance: feather grass steppes and stipa (*Stipa glareosa*) semi-deserts (Bannikov, 1954). *S. glareosa* steppes are of secondary importance and grass-thistle desert steppes even less so. Analysis of habitat distributions have shown that the optimal region of the Mongolian gazelle's current range is in the Daurian-Mongolian Plain located in the center of the extracontinental East-Siberian-Central-Asian sector of the Palaearctic region, within the Eurasian steppe region and Sahara-Gobian desert region (Lushchekina et al., 1986). Here are found dry, small-root, mat-grass steppes at altitudes from 800 to 1,000 m above sea level with an average annual precipitation of 200–300 mm. Mongolian gazelles are frequently found near salt flats (*solonchaks*) and lakes in areas with minimal human interference.

Foods of the Mongolian gazelle include at least 21 plants (Bannikov, 1954; Lushchekina et al., 1986). Principal species are *Stipa glareosa* and *Allium polyrhizum*. Mongolian gazelles also eat considerable amounts of wild rye (*Elymus*), sagebrush (*Artemisia*), summer cypress (*Kochia*), hair grass (*Koeleria*), and pea shrub (*Caragana*). In many places onion (*Allium*) bulbs are dug up and damaged by Mongolian gazelles. Mongolian gazelles may also ingest herbaceous leaf litter, as shown by both direct observation and stomach analysis (Bannikov, 1954; Lushchekina et al., 1986).

Watering sites are not necessary for Mongolian gazelles. Green plants or herbaceous litter on which dew has accumulated in the morning hours are sufficient to provide them with free water. However, if free water sources are available, including blackish water in *solonchaks*, Mongolian gazelles readily visit them, especially in hot weather. In winter Mongolian gazelles obtain water by consuming snow (Bannikov, 1954).

The total population of the Mongolian gazelle throughout its range was ca. 1.5 million in the 1940s, about two-thirds in Mongolia and one-third in China. Nearly 50,000 Mongolian gazelles lived in the Chuisk steppe and in the Trans-Baikal region of the USSR. At the same time, there were mass migrations of these animals to the territory of the Soviet Union. At present, the Mongolian gazelle is very rare in Russia. There are no recent data on the number of Mongolian gazelles in China. The greatest annual increase in Mongolian gazelle populations does not exceed 20–25%, and in unfavorable years it may be reduced by two to three times (Zhirnov, 1978). The number of animals in 1975–76 was ca. 200,000. In the winter of 1977, nearly 70,000 Mongolian gazelles were harvested by hunters of eastern Mongolia. In the summer of 1978, the population numbered about 100,000. Following protection from hunting in 1978 in Mongolia and migration from China, where there was intensive harvesting of these animals, the number of Mongolian gazelles in Mongolia once again increased. In the summer of 1979, the population in Mongolia was ca. 250,000. Spring drought and epizootic disease in 1980 reduced the population to ca. 150,000–180,000. Since 1981 the number of Mongolian gazelles has increased, but it has stabilized at 350,000–400,000 individuals (Lushchekina et al., 1983).

Until the 1950s, more-or-less distinct seasonal migrations of Mongolian gazelles occurred annually (Bannikov, 1954). In ordinary years Mongolian gazelles in summer inhabit mostly steppe dominated by feather grasses (*Stipa krylovii*, *S. glareosa*); *S. glareosa*-onion (*Allium*) and *S. glareosa-Salsola* steppe; and thistle steppes and semideserts. In late August or in September, Mongolian gazelles gather into large herds in feather grass-onion and feather grass-saltwort (*Anabasis brevifolia*)-onion steppes. With the disappearance of *Anabasis* and withering of onions, Mongolian gazelles move to feather grass-stipa (*S. glareosa*) steppes and semidesert located farther to the north. If snow falls in January–February, migration to the north to forb steppes occurs. In spring of normal years, Mongolian gazelles migrate southward from forb to feather grass steppes. Over the past few decades no such migrations have been observed. Today the basic migratory routes are followed only in the Tukhmiin-Gobi region and to the southeast of Erdene-Tsagan-somon, and here only are the migrations of these animals somewhat regular. The construction of the railway from Ulan-Bator to Dzamyn-Ud with its associated wire fence, and the intense development of the eastern regions in Mongolia, have apparently disturbed the migratory routes of Mongolian gazelles. Local migrations associated with changes of pastures are now more characteristic of Mongolian gazelles (Lushchekina et al., 1983).

Because the Mongolian gazelle is a steppe herbivore, its main competitor appears to be Brandt's vole (*Lasiopodomys brandti*; Bannikov, 1954). Natural disasters also affect the population of these animals, contributing to their mortality. Severe snowstorms, deep snow cover (*dzhut*), and ice-covered ground (*nast*) are detrimental to Mongolian gazelles. Such weather phenomena cause both mass mortality and mass migration of animals to regions with more suitable winter conditions (Bannikov, 1954).

Wolves (*Canis lupus*) were considered chief predators of Mongolian gazelles, but at present, wolves do not play an important role as predators because their populations have been reduced through large-scale control. Newborn Mongolian gazelles often fall prey to manul cats (*Felis manul*) and golden eagles (*Aquila chrysaetos*). Other predators, such as red foxes (*Vulpes vulpes*), corsac foxes (*V. corsac*), kites (*Milvus*), and buzzards (*Buteo*), whose food residues were found to contain wool and bones of Mongolian gazelles, only scavenge carcasses (Bannikov, 1954). Apparently humans may have the greatest impact on Mongolian gazelles, because intensification of agriculture, plowing of virgin lands, enlargement of settlements, construction of numerous wells, sheep-yards, pens, roads, and direct harassment of this species coincide with a considerable change in geographic distribution and decline of the total Mongolian gazelle population, as compared to data adduced by Bannikov (1954) for the mid-1940s.

High concentrations of Mongolian gazelles on limited areas give rise to increased probability of epizootic diseases. Mass mortality of Mongolian gazelles has been observed repeatedly, but its cause has not always been clarified. During 1963–64 in eastern Mongolia, there was high mortality of Mongolian gazelles from hoof and mouth disease (Lushchekina et al., 1986). High mortality of *P. gutturosa* resulting from epizootics of pasteurellosis has been recorded (Khaidaav and Chagnaadorzh, 1969). Analysis of blood sera from Mongolian gazelles in eastern Mongolia indicated that this species contributed in maintaining the circulation of influenza viruses (Lushchekina et al., 1986).

Studies on the parasitic fauna of Mongolian gazelles are scarce. Larvae of the gadfly *Przevalskiana aenigmatica* are subcutaneous parasites of these animals. Almost all Mongolian gazelles are infested with larvae of the gadfly *Pharyngomyia dzerenae* (Grunin, 1950). Parasitic flies of the family Hippoboscidae are commonly found in the hair of these animals. In spring, ticks of the genus *Dermacentor* can be found in the ears and groin. The percentage of Mongolian gazelles infested with parasitic worms (e.g., *Echinococcus* in liver, heart, lungs; *Trichina* in liver; tapeworm larvae in cardiac and skeletal muscle; nematodes in intestine) is high (Bannikov, 1954).

The Mongolian gazelle has long been the most important game animal in the ungulate fauna of Mongolia and appears to be chief among them as a commercial source of meat. In 1932 state trade organizations purchased 13,600 carcasses; in 1933, 30,000; and in 1940, over 60,000. In subsequent years, state purchases of Mongolian gazelles ranged from 15,000 in 1980 to 70,000 in 1977. These figures do not reflect the total number of animals harvested, because a considerable number are shot by unlicensed hunters and thus are uncounted (Sokolov et al., 1982).

The basic product obtained from the Mongolian gazelle is excellent high-caloric meat. Winter-taken skins of Mongolian gazelles are used for sewing winter *del*, a traditional Mongolian outer garment. However, the hair is not durable and rapidly frays. The tanned hide is used to produce chamois and chrome leather. Horns are made into handles for knives and various household articles (Lushchekina et al., 1986). From the horns of young Mongolian gazelles, the Institute of National Medicine under the Ministry of Public Health of the Mongolian People's Republic produced a drug named "procaprin," which is said to exert sedative and tonic effects. In addition, the drug reduces smooth muscle spasms in certain regions of the gastrointestinal tract and peripheral vasospasm (Khaidaav et al., 1986).

BEHAVIOR. Mongolian gazelles may be encountered in groups of various sizes, ranging at times from solitary animals to large herds (Bannikov, 1954). Large aggregations of Mongolian gazelles (>10,000) have been most frequently reported in May–June and in October during calving and autumn migrations, respectively. Families and single animals unite into herds that in turn unite into aggregations which remain within a specific territory and in a definite hierarchy (Lushchekina et al., 1986). Adult males during the rut have individual territories. During calving, females gather in places of mass reproduction. From one to two weeks after calving, the aggregations break up into individual herds and form mixed groups, which include newborn juveniles, females, and several males; only in autumn do the herds gather again in preparation for migrations before the rut and wintering. Winter aggregations disintegrate in April and at this time pregnant females fall behind the main herd. Near the end of June, groups of pregnant females separate, typically into groups of several dozen each (Bannikov, 1954).

Mongolian gazelles are polygamous. Rut begins in late November and continues through December, and sometimes into early January. Males begin to pursue females in November, but mating takes place only in December, more or less synchronously across the population as a whole, despite the lengthy rut (Bannikov, 1954). Initially an adult male establishes a territory and retains several females within it, forming a harem. At the same time, the male produces guttural, bellowing sounds. Rather frequent fights arise between males, but they are not violent. During the rut adult males, using their horns, drive off young males from their territories, and these excluded animals roam in solitude or form their own herds. Territories are occupied for 2–3 weeks. By the end of the rut, males have lost considerable weight (Bannikov, 1954).

In summer Mongolian gazelles begin to graze shortly before sunrise. They feed almost the entire day until dusk, with short rest intervals of 30–40 min. Only part of a herd rests at any time, and feeding and resting animals continually alternate. On particularly hot days most Mongolian gazelles lie in the grass or under *Caragana* bushes, or chiy (cheegrass; *Achnaterum splendens*). Mongolian gazelles spend the greater part of the night on the lee side of low bushes. In autumn and winter Mongolian gazelles graze most of the daylight hours. Rest periods and night are spent in shallow pits which they dig in the snow or ground (Bannikov, 1954).

The Mongolian gazelle is one of the fastest ungulate species. When running parallel to a moving vehicle, or when chased, Mongolian gazelles can run at speeds of 60–70 km/hr, which they can easily maintain for 12–15 km (Bannikov, 1954). Herds within a large aggregation flee from their pursuer(s) in circles and in 80% of cases, they try to cross in front of the pursuer. When a disturbed herd runs across the steppe, some animals are frequently seen making observation jumps without slowing their pace (Bannikov, 1954). Mongolian gazelles avoid soft ground, sand, and sticky clay soil. They move through snow deeper than 20 cm only with difficulty. On ice Mongolian gazelles slip and cannot run quickly. They swim well and have been observed to swim across such rivers as the Kerulen and Onon (Bannikov, 1954).

GENETICS. The diploid number of chromosomes is 58. All chromosomes are acrocentrics of graduated size, except for the smallest pair which are metacentrics. Both X and Y sex chromosomes are acrocentric. The karyotype of the Mongolian gazelle retains primitive features, being representated predominantly by acrocentric chromosomes (Orlov et al., 1978; Soma et al., 1980).

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